Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, comprising ~~the steps of~~:

storing a reference image including a foreground and a background, said foreground and said background each having a predetermined value of density distribution;

inputting an image of the object, said image including a foreground and a background, said foreground and said background each having a predetermined value of density distribution;

storing a function for giving said predetermined values of density distribution of said reference image ~~equal~~ corresponding to said predetermined values of density distribution of said input image, respectively, said function providing a predetermined form pattern, such that one of said predetermined values of density distribution of said foreground and said background of said reference image is high, and another is low; and

obtaining a normalized correlation coefficient between said reference image and said input image using said function.

Claims 2-3 (Canceled)

4. (Previously Presented) The method as claimed in claim 1, wherein said function is obtained by designating a pattern of said reference image, overlaying an image of said pattern on said input image, and designating one of a predetermined value of density distribution of said image and a predetermined value of density of said image.

5. (Previously Presented) The method as claimed in claim 1, wherein said function is obtained by extracting an outline of the object, overlaying an image of said outline on said Input image, and designating one of a predetermined value of density distribution of said image and a predetermined value of density of said image.

6. (Previously Presented) The method as claimed in claim 1, wherein said normalized correlation coefficient is obtained from simple summation of a cross-correlation coefficient.

7. (Currently Amended) A method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, comprising ~~the steps of~~:

storing a reference image including a foreground, said foreground having a predetermined value of density distribution;

inputting an image of the object, said image including a foreground, said foreground having a predetermined value of density distribution;

storing a function for giving said predetermined value of density distribution of said reference image ~~equal~~ corresponding to said predetermined value of density distribution of said input image; and

obtaining a normalized correlation coefficient between said reference image and said input image using said function, said normalized correlation coefficient being calculated with a term of a background of said reference image excluded from an equation of an autocorrelation coefficient of each of said reference image and said input image and an equation of a cross-correlation coefficient between said reference image and said input image.

8. (Previously Presented) The method as claimed in claim 7, wherein said function is obtained by designating a pattern of said reference image, overlaying an image of said pattern on said input image, and designating one of a predetermined value of density distribution of said image and a predetermined value of density of said image.

9. (Previously Presented) The method as claimed in claim 7, wherein said function is obtained by extracting an outline of the object, overlaying an image of said outline on said input image, and designating one of a predetermined value of density distribution of said image and a predetermined value of density of said image.

10. (Canceled)

11. (Previously Presented) The method as claimed in claim 7, wherein said normalized correlation coefficient is obtained from simple summation of said cross-correlation coefficient.

12. (Currently Amended) A medium for recording a computer program having a method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, the method comprising ~~the steps of~~:

storing a reference image including a foreground and a background, said foreground and said background each having a predetermined value of density distribution;

inputting an image of the object, said image including a foreground and a background, said foreground and said background each having a predetermined value of density distribution;

storing a function for giving said predetermined values of density distribution of said reference image ~~equal~~ corresponding to said predetermined values of density distribution of said input image, respectively, said function providing a predetermined form pattern such that one of said predetermined values of density distribution of said foreground and said background of said reference image is high, and another is low; and

obtaining a normalized correlation coefficient between said reference image and said input image using said function.

13. (Currently Amended) A medium for recording a computer program having a method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, comprising ~~the steps of~~:

storing a reference image including a foreground, said foreground having a predetermined value of density distribution;

inputting an image of the object, said image including a foreground, said foreground having a predetermined value of density distribution;

storing a function for giving said predetermined value of density distribution of said reference image ~~equal~~ corresponding to said predetermined value of density distribution of said input image; and

obtaining a normalized correlation coefficient between said reference image and said input image using said function, said normalized correlation coefficient being calculated with a term of a background of said reference image excluded from an equation of an autocorrelation coefficient of each of said reference image and said input image and an equation of a cross-correlation coefficient between said reference image and said input image.

Claims 14–17 (Canceled)

18. (Currently Amended) A method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, comprising:

storing a reference image including a foreground and a background, the foreground and the background providing a predetermined ~~density condition~~ contrast pattern;

inputting an image of the object, the image including a foreground and a background, the foreground and the background providing a predetermined ~~density condition~~ contrast pattern;

obtaining a function for giving the predetermined ~~density condition~~ contrast pattern of the reference image corresponding to the predetermined ~~density condition~~ contrast pattern of the input image, the function providing a predetermined form pattern; and

calculating a normalized correlation coefficient between the reference image and the input image using the function.

Claims 19–24 (Canceled)

25. (Previously Presented) The method as claimed in claim 18, wherein the obtaining step is carried out by designating a pattern of the reference image, overlaying an image of the pattern on the input image, and designating one of a density distribution of the image and a density of the image.

26. (Previously Presented) The method as claimed in claim 18, wherein the obtaining step is carried out by extracting an outline of the object wherein an area inside the outline serves as the foreground and an area outside the outline serves as the background, overlaying an image of the outline on the input image, and designating one of a density distribution of said image and a density of the image.

27. (Currently Amended) The method as claimed in claim ~~15~~ 18, wherein the calculating step is carried out by simple summation of a cross-correlation coefficient.

28. (Previously Presented) The method as claimed in claim 18, wherein the calculating step is carried out with respect to the normalized correlation coefficient between the foreground of the reference image and the foreground of the input image only.

29. (Previously Presented) The method as claimed in claim 28, wherein the calculating step is carried out with a term of the background of the reference image excluded from an equation of an autocorrelation coefficient of each of the reference image and the input image and an equation of a cross-correlation coefficient between the reference image and the input image.

30. (Currently Amended) A medium for recording a computer program having a method of recognizing an object based on pattern matching using a gray-scale normalized correlation method, the method comprising:

storing a reference image including a foreground and a background, the foreground and the background providing a predetermined ~~density condition~~ contrast pattern;

inputting an image of the object, the image including a foreground and a background, the foreground and the background providing a predetermined ~~density condition~~ contrast pattern;

obtaining a function for giving the predetermined ~~density condition~~ contrast pattern of the reference image corresponding to the predetermined ~~density condition~~ contrast pattern of the input image, the function providing a predetermined form pattern; and

calculating a normalized correlation coefficient between the reference image and the input image using the function.

Claim 31 (Canceled)